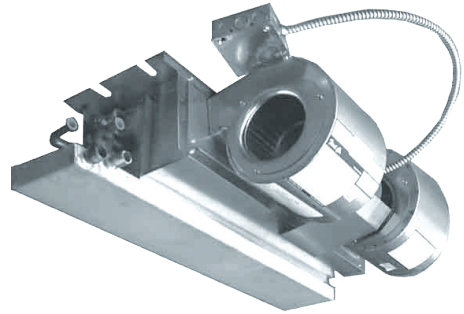




HHX Series

PHHX / RHHX / CHHX

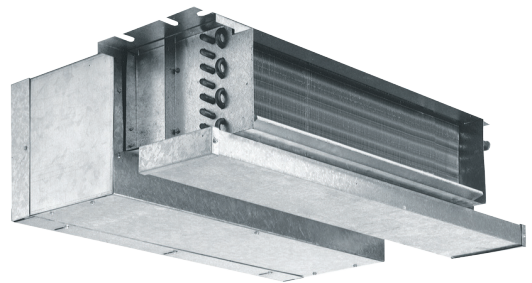
Horizontal Ceiling Fan Coil



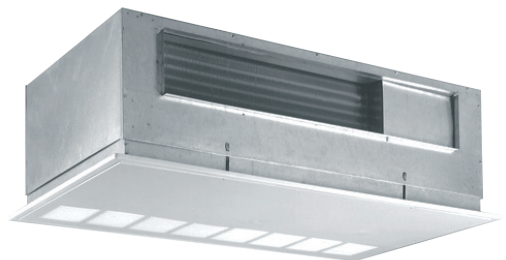
Ceiling Concealed

ECM Motor
 Chilled Water / Hot Water
 2-Pipe with Electric Heat
 300 - 1200 CFM

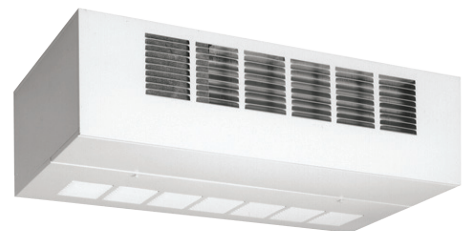
The ECM motor option includes 24V controls, a constant torque, permanent magnet, brushless DC motor, with four discrete speed taps that allow for high static applications and precise air balancing.



Ceiling Concealed with Plenum



Ceiling Recessed



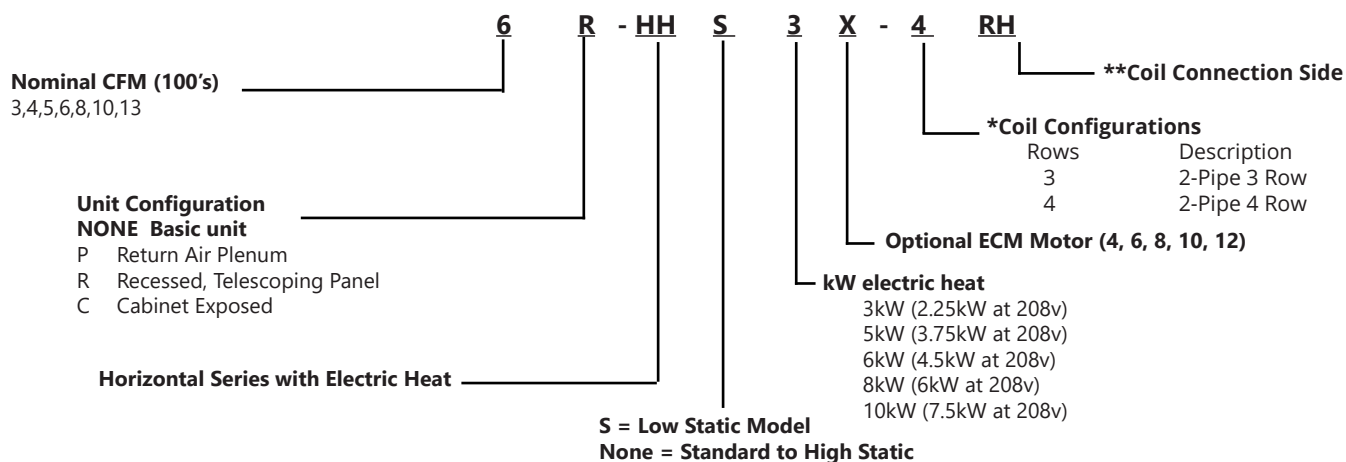
Ceiling Exposed



Table of Contents

Table of Contents	1
Nomenclature	1
Features	2 - 3
Physical Data	4 - 7
Cooling Performance	8
Electrical and Kw	9 - 10
Blower Performance ECM Motor	11 - 15
Guide Specifications	16 - 17
Access/Filter Panels	18
Accessories	19
Piping Diagrams	20

MODEL NOMENCLATURE



Available Voltage (PSC Motors)
 208-230V/1/60
 277V/1/60

****Coil Connection Side**
 RH Right Hand (default)
 LH Left Hand
 Hand connection is determined by looking with airflow

STANDARD FEATURES

Basic Unit

All fan coils are manufactured with heavy gauge galvanized steel to resist corrosion. All models are approved for installation with "0" clearance to combustible material.

Insulation

Plenums and cabinets are insulated with Tuf-Skin dual density fiber glass blanket insulation with an anti-microbial agent.

Ceiling Panels

Hinged access/return panels are manufactured with heavy gauge galvanized steel with captive mounting screws and an attractive white baked powder finish.

Condensate Pans

Positive sloped drain pans are galvanized steel, coated on the inside surface with insulation. Pan includes both primary and secondary drain connections.

Return Air Plenums

Return air plenums are manufactured from galvanized steel insulated with dual density fiber glass blanket insulation and a 1" TA fiber glass filter.

Coils

Constructed with seamless copper tubes and headers. The tubes are mechanically expanded into corrugated aluminum fin material for a permanent primary to secondary surface bond. Coils are tested under water at 450 PSI for operation at 300 PSI. Coils include manual air vents.

Fan Wheels-Housing

The fan wheels are double width, double inlet (DWDI) forward curved, centrifugal type. Wheels are statically and dynamically balanced for smooth, quiet operation. The housing is constructed from heavy gauge galvanized steel with die-formed inlet cones.

Motors

Standard motors are ECM, permanently lubricated type with internal thermal overload protection.

Options

Factory mounted options include PSC motors, stainless steel drain pans, foil faced cabinet insulation, Multi-24 3-speed 24V control, valve packages, thermostats, aqua stats, service switches. 120V, 208V/230V, 277V, 60hz

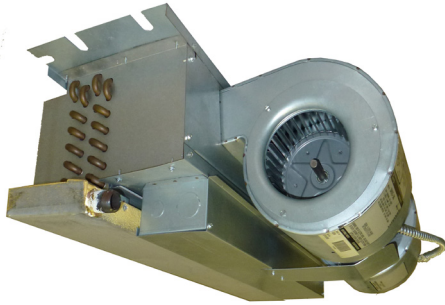


**MERV 8
Louvered Access Panels**
See page 29



ECM MOTOR OPTION

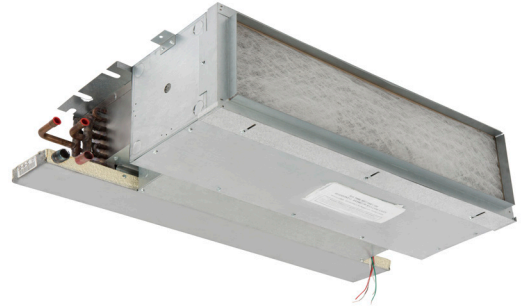
This new ECM motor option includes 24V controls, a constant torque, permanent magnet, brushless DC motor, with four discrete speed taps that allow for precise air balancing.



HH(X) SERIES

CEILING CONCEALED

The *HH series is designed for fully concealed applications. This 10" high space saving unit provides easy access for service and maintenance.



PHH(X) SERIES

CEILING CONCEALED WITH PLENUM

The *PHH series is designed for fully concealed applications. This 10" high space saving unit provides easy access for service and maintenance.



RHH(X) SERIES

CEILING RECESSED

Includes adjustable hinged access/return panel with 1" TA fiber glass filter. The cabinet allows for a field mounted rear return duct connection by using a solid access panel.



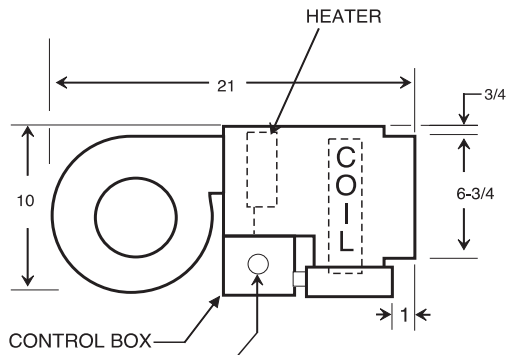
CHH(X) SERIES

CEILING EXPOSED

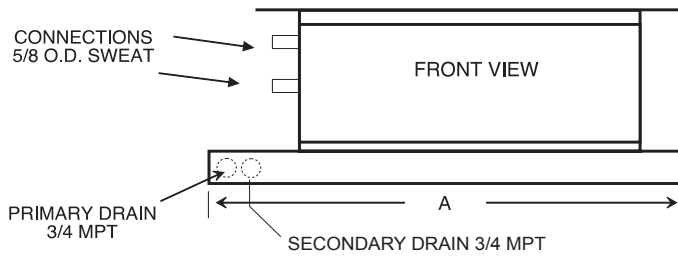
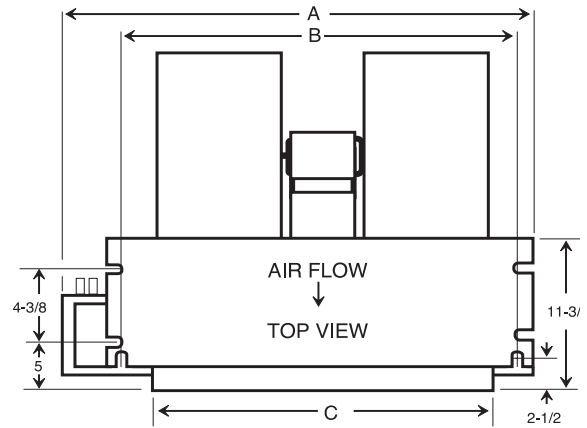
Cabinet with an attractive baked powder finish. Cabinet includes stamped discharge opening and hinged bottom panel with 1" TA fiber glass filter.

HHX Series

CEILING RECESSED



LOW VOLTAGE WIRING THIS END --- SUPPLY VOLTAGE WIRING OPPOSITE END



NOTE: RIGHT HAND MODEL SHOWN - LEFT HAND MODEL HAS DRAIN AND PIPING CONNECTIONS ON OPPOSITE SIDE OF FAN COIL.

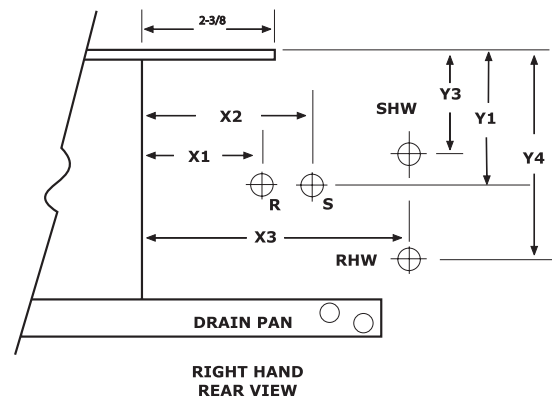
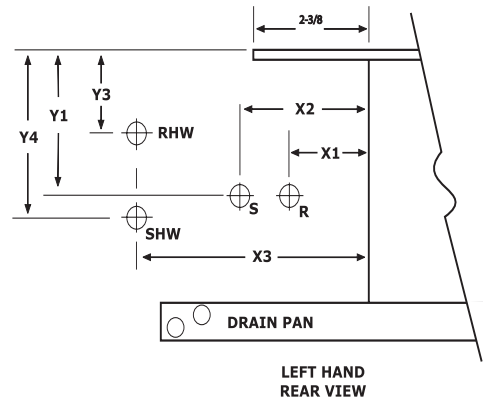
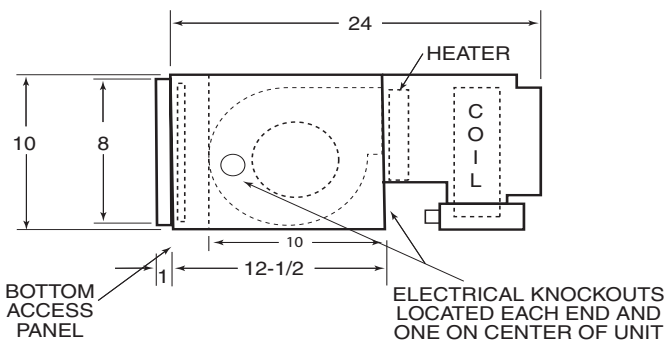
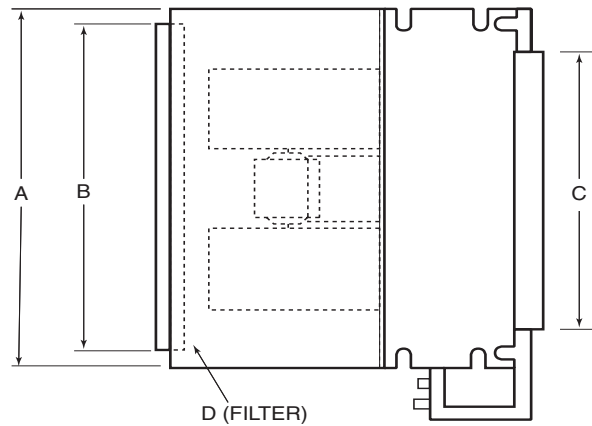
PHYSICAL DIMENSIONS (LESS PLENUM)					
MODEL	A	B	C	NUMBER OF MOTORS	NUMBER OF BLOWERS
3HHS	25	19-11/16	15	1	1
4HHS(X) 6HHS(X) 6HH(X) 8HH(X)	40	34-11/16	30	1	2
10HH(X)	46	40-11/16	36	1	2
12HH(X)	52	46-11/16	42	1	2



In keeping with its policy of continuous progress and product improvement, First Operations reserves the right to make changes without notice. Maintenance for all First Co. products is available under "Product Maintenance" at www.firstco.com.

PHHX Series

CEILING RECESSED



PLENUM DATA				
MODEL	A	B	C	D (FILTER)
3PHHS	20	18	15	10 X 20 X 1
4PHHS(X) 6PHHS(X) 6PHH(X) 8PHH(X)	34	32	30	10 X 34 X 1
10PHH(X)	40	38	36	10 X 40 X 1
12PHH(X)	46	44	42	10 X 46 X 1

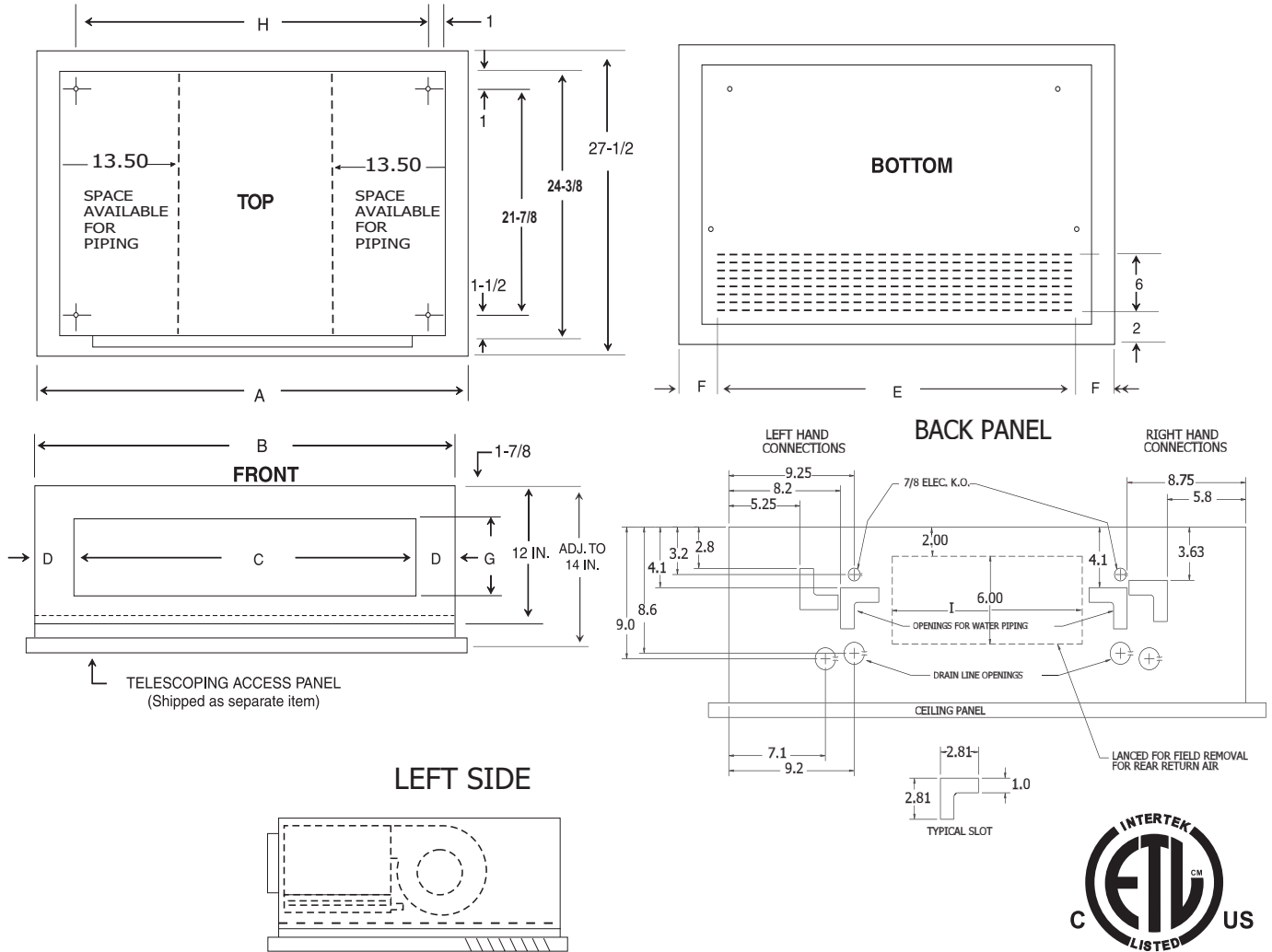
- NOTE:**
1. Return plenums are insulated
 2. All plenums include throw away filter



In keeping with its policy of continuous progress and product improvement, First Operations reserves the right to make changes without notice. Maintenance for all First Co. products is available under "Product Maintenance" at www.firstco.com.

RHHX Series

CEILING RECESSED



NOTES:

- 1) ALL DIMENSIONS IN INCHES.
- 2) COIL CONNECTION TOLERANCE $\pm 1/4"$.
- 3) LEFT HAND UNIT SHOWN, RIGHT HAND MIRROR IMAGE.
(HAND IS DETERMINED BY FACING THE BLOWER END)

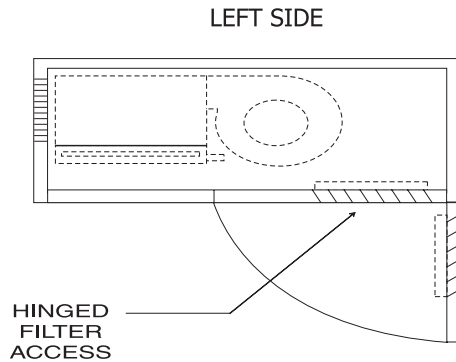
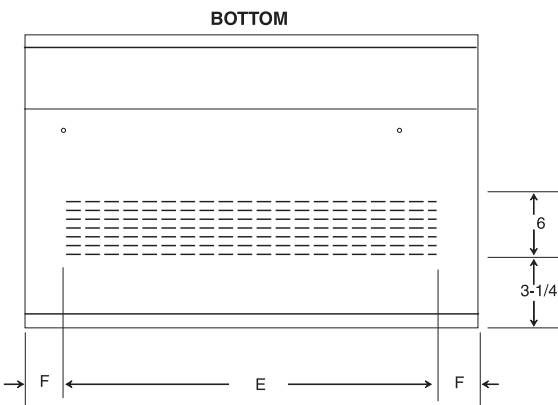
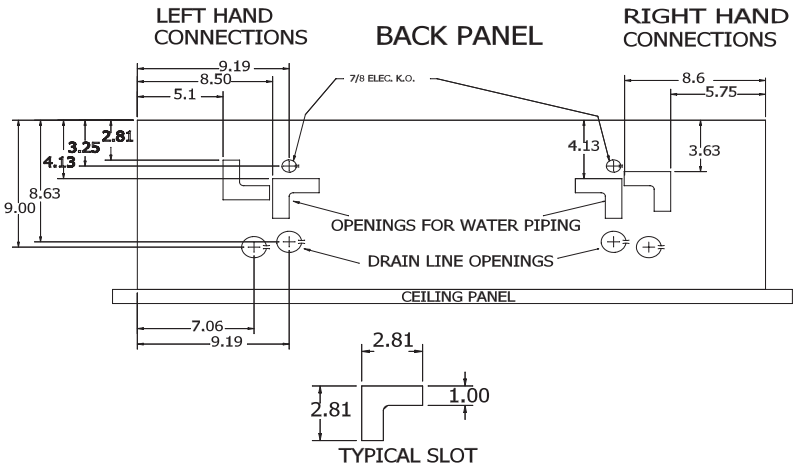
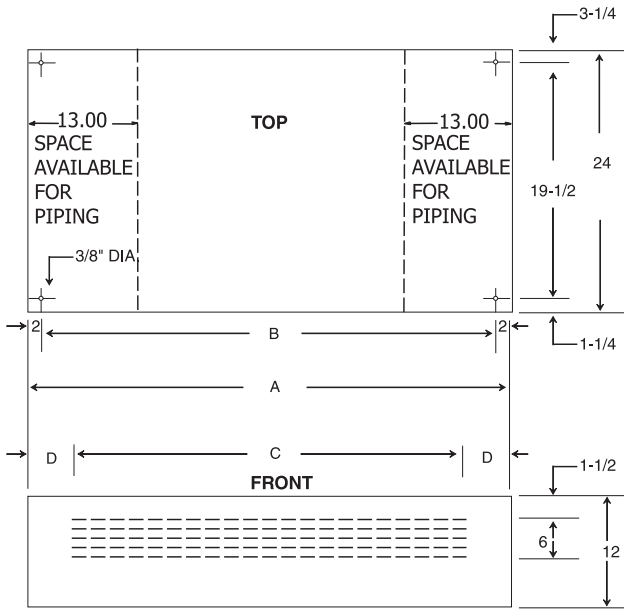
NOTES:

1. Telescoping panel allows the cabinet to be installed to within 2 inches of the ceiling line. The adjustable panel frame ensures a flush installation.
2. Louvered access panel (bottom return) is standard. Specify solid panel if ducted rear return air is required.

GENERAL DIMENSIONS												
MODEL	A	B	C	D	E	F	G	H	I	TELESCOPING LOUVERED ACCESS PANEL	TELESCOPING SOLID ACCESS PANEL	FILTER SIZE (INCL)
3RHHS	41	38-1/8	29	4-1/2	36-5/8	2-3/16	5-1/2	36	14	968-1	968-1S	10 X 37
4RHHS(X)	51	48-1/8	39	4-1/2	47-1/4	1-7/8	5-1/2	46	24	968-3	968-3S	10 X 47.5
6RHHS(X) 6RHH(X) 8RHH(X)	51	48-1/8	39	4-1/2	47-1/4	1-7/8	5-1/2	46	24	968-3	968-3S	10 X 47.5
10RHH(X)	57	54-1/8	45	4-1/2	52-1/2	2-1/4	5-1/2	52	30	968-4	968-4S	10 X 53
12RHH(X)	63	60-1/8	51	4-1/2	57-7/8	2-9/16	5-1/2	58	36	968-5	968-5S	10 X 59

CHHX Series

CEILING EXPOSED



NOTES:

- 1) ALL DIMENSIONS IN INCHES.
- 2) COIL CONNECTION TOLERANCE $\pm 1/4"$.
- 3) LEFT HAND UNIT SHOWN, RIGHT HAND MIRROR IMAGE.
(HAND IS DETERMINED BY FACING THE BLOWER END)

NOTES:

1. Side panels are removable for easier valve access.
2. Plastic thumb screws are provided for easy filter access.

GENERAL DIMENSIONS								
MODEL	A	B	C	D	E	F	FILTER SIZE (INCL)	CONNECTIONS PRIMARY O.D.
3CHHS(X)	33	29	21	6	25-1/2	3-1/2	10 X 30	5/8"
4CHHS(X)	48	44	37	5-1/2	41-1/2	3-1/2	10 X 46	
6CHHS(X) 6CHH(X)	48	44	37	5-1/2	41-1/2	3-1/2	10 X 46	
8CHH(X)	48	44	37	5-1/2	41-1/2	3-1/2	10 X 46	
10CHH(X)	54	50	42-1/2	5-3/4	46-1/2	3-1/2	10 X 53	
12CHH(X)	60	56	48	6	52	4	10 X 59	

COOLING CAPACITIES

Product Specifications

Horizontal Fan Coils

2 Pipe

AIR STANDARD APPROVED RATINGS								
MODEL	COIL	CFM	GPM	P.D. (FT.WTR.)	COOLING (1000 BTUH)		POWER INPUT (WATTS)	TYPE MOTOR
					TH	SH		
3HHS(*)-230-3	3 ROW	280	1.5	3.3	7.5	4.9	130	SP
4HHS(*)-230-3		410	2.6	12.0	12.9	8.9		PSC
4HHX(*)-230-3								ECM
6HHS(*)-230-3		590	3.1	7.0	15.4	10.5		PSC
6HH(*)-230-3		790	4.0	10.5	19.8	14.2		PSC
6HHX(*)-230-3								ECM
8HH(*)-230-3		950	4.2	6.5	21.2	16.3	320	PSC
8HHX(*)-230-3								ECM
10HH(*)-230-3			5.2	10.0	26.2	20.2	398	PSC
10HHX(*)-230-3								ECM
12HH(*)-230-3			6.4	9.2	32.1	24.9	490	PSC
12HHX(*)-230-3								ECM
3HHS(*)-230-4		4 ROW	220	1.7	5.0	8.5	5.1	120
4HHS(*)-230-4	400		3.2	24.0	15.8	9.8		PSC
4HHX(*)-230-4								ECM
6HHS(*)-230-4	550		3.3	6.0	16.5	11.0		PSC
6HH(*)-230-4	770		4.5	9.0	22.5	15.5		PSC
6HHX(*)-230-4								ECM
8HH(*)-230-4	920		5.0	10.0	24.9	17.5	310	PSC
8HHX(*)-230-4								ECM
10HH(*)-230-4			6.2	10.5	30.9	22.1	390	PSC
10HHX(*)-230-4								ECM
12HH(*)-230-4			8.4	18.4	42.2	30.7	485	PSC
12HHX(*)-230-4								ECM

NOTE:

Ratings based on high fan speed, standard air at dry coil operation, 10 °F water temp. rise, ent. air 80DB, 67WB entering water at 45°F.

Rated in accordance with ARI Standard 440.

SH - sensible heat
TH - total heat
Sp - shaded pole motor
PSC - perm. split capacitor
 ECM - Electrically commutated motor
 Power input is for motor only

HH(X) Series

ELECTRICAL DATA ECM (240V)											
UNIT MODEL		NOM. CFM	HEAT				TOTAL AMPS (1)	MIN. CIR. AMPACITY (MCA)		MAX. OVERCURRENT PROTECTION (MOP)	
			KW @ 240V	BTUH @ 240V	KW @ 208V	BTUH @ 208V		208V	240V	208V	240V
4HHSX	-2	400	2	6,820	1.5	5,120	9.7	11	13	15	15
	-3		3	10,230	2.3	7,680	13.9	16	18	20	20
	-4		4	13,640	3.0	10,240	18.1	20	23	20	25
	-5		5	17,050	3.8	12,800	22.2	25	28	25	30
6HHSX	-3	600	3	10,230	2.3	7,680	13.9	16	18	20	20
	-4		4	13,640	3.0	10,240	18.1	20	23	20	25
	-5		5	17,050	3.8	12,800	22.2	25	28	25	30
	-6		6	20,460	4.5	15,360	26.4	29	33	30	35
6HHX	-3	600	3	10,230	2.3	7,680	16.8	19	21	20	25
	-4		4	13,640	3.0	10,240	21.0	24	27	25	30
	-5		5	17,050	3.8	12,800	25.1	28	32	30	35
	-6		6	20,460	4.5	15,360	29.3	33	37	35	40
	-8		8	27,280	6.0	20,480	37.6	42	47	50	50
	-10		10	34,100	7.5	25,600	46.0	51	58	60	60
8HHX	-3	800	3	10,230	2.3	7,680	16.8	19	21	20	25
	-4		4	13,640	3.0	10,240	21.0	24	27	25	30
	-5		5	17,050	3.8	12,800	25.1	28	32	30	35
	-6		6	20,460	4.5	15,360	29.3	33	37	35	40
	-8		8	27,280	6.0	20,480	37.6	42	47	50	50
	-10		10	34,100	7.5	25,600	46.0	51	58	60	60
10HHX	-3	1000	3	10,230	2.3	7,680	16.8	19	21	20	25
	-4		4	13,640	3.0	10,240	21.0	24	27	25	30
	-5		5	17,050	3.8	12,800	25.1	28	32	30	35
	-6		6	20,460	4.5	15,360	29.3	33	37	35	40
	-8		8	27,280	6.0	20,480	37.6	42	47	50	50
	-10		10	34,100	7.5	25,600	46.0	51	58	60	60
12HHX	-3	1200	3	10,230	2.3	7,680	16.8	19	21	20	25
	-5		5	17,050	3.8	12,800	25.1	28	32	30	35
	-6		6	20,460	4.5	15,360	29.3	33	37	35	40
	-8		8	27,280	6.0	20,480	37.6	42	47	50	50
	-10		10	34,100	7.5	25,600	46.0	51	58	60	60

(1) Includes motor and heaters (at 240V)

HHX Series

ELECTRICAL DATA ECM (277V)									
UNIT MODEL		NOM. CFM	HEAT		MO-TOR HP	MO-TOR AMPS	TOTAL AMPS (1)	MIN. CIR. AMPACITY (MCA)	MAX. OVER-CURRENT PROTECTION (MOP)
			KW @ 277V	BTUH @ 277V				277V	277V
4HHSX	-3-277	400	3	10,230	1/6	1.4	12.2	16	20
	-5-277		5	17,050				25	25
	-6-277		6	20,460				29	30
6HHSX	-3-277	600	3	10,230	1/6	1.4	12.2	16	20
	-5-277		5	17,050				25	25
	-6-277		6	20,460				29	30
6HHX	-3-277	600	3	10,230	1/2	3.6	14.4	18	20
	-4-277		4	13,640		3.6	18.0	23	25
	-5-277		5	17,050		3.6	21.7	28	30
	-6-277		6	20,460		3.6	25.3	32	35
8HHX	-3-277	800	3	10,230	1/2	3.6	14.4	18	20
	-4-277		4	13,640		3.6	18.0	23	25
	-5-277		5	17,050		3.6	21.7	28	30
	-6-277		6	20,460		3.6	25.3	32	35
	-8-277		8	27,280		3.6	32.5	41	45
	-10-277		10	34,100		3.6	39.7	50	50
10HHX	-3-277	1000	3	10,230	1/2	3.6	14.4	18	20
	-4-277		4	13,640		3.6	18.0	23	25
	-5-277		5	17,050		3.6	21.7	28	30
	-6-277		6	20,460		3.6	25.3	32	35
	-8-277		8	27,280		3.6	32.5	41	45
	-10-277		10	34,100		3.6	39.7	50	50
12HHX	-3-277	1200	3	10,230	1/2	3.6	14.4	18	20
	-5-277		5	17,050		3.6	21.7	28	30
	-6-277		6	20,460		3.6	25.3	32	35
	-8-277		8	27,280		3.6	32.5	41	45
	-10-277		10	34,100		3.6	39.7	50	50

(1) Includes motor and heaters

HHX 230 VOLT ECM

BLOWER PERFORMANCE

HHX Series 230V													
MODEL	MOTOR HP	SPEED TAP											
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
3HHSX	1/20	Optional High	353	333	319	305	269	258	246	234	220	206	193
		Std. High	293	277	245	234	224	211	201	191	180	169	159
		Std. Low	248	229	216	202	188	177	165	153	140	129	---
4HHSX	1/7 or 1/10	Optional High	473	430	409	392	371	357	341	328	---	---	---
		Std. High	395	373	350	332	308	290	247	229	---	---	---
		Std. Low	323	290	263	241	217	196	176	149	---	---	---
6HHSX	1/7	Optional High	665	625	595	570	545	525	505	---	---	---	---
		Std. High	625	575	545	520	495	475	455	---	---	---	---
		Std. Low	520	480	445	415	390	365	340	---	---	---	---
6HHX	1/2	Optional High	806	780	754	734	714	698	683	662	642	608	575
		Std. High	679	654	629	609	589	570	551	530	510	495	479
		Std. Low	589	555	520	502	483	467	452	427	402	378	354
8HHX	1/2	Optional High	916	879	842	810	779	742	706	671	637	601	565
		Std. High	864	840	816	790	765	731	698	665	633	597	560
		Std. Low	761	733	706	682	658	637	616	597	579	558	536
10HHX	1/2	Optional High	1275	1252	1229	1212	1196	1174	1152	1108	1064	1016	969
		Std. High	1177	1152	1127	1109	1091	1072	1053	1037	1020	986	951
		Std. Low	992	969	946	927	908	886	864	848	832	812	791
12HHX	1/2	Optional High	1363	1344	1325	1305	1285	1268	1252	1234	1217	1199	1181
		Std. High	1267	1244	1221	1202	1184	1167	1150	1132	1115	1097	1079
		Std. Low	1110	1092	1073	1060	1047	1039	1030	994	957	939	921

HHSX-HHX 240V

BLOWER PERFORMANCE

HHX 3-ROW (240V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4HHSX-3	1/7	Opt. High	495	465	435	410	380	355	330	-	-	-
		Std. High	435	415	385	360	335	305	280	-	-	-
		Std. Low	370	345	320	290	265	240	210	-	-	-
6HHSX-3	1/7	Opt. High	700	665	630	605	580	555	535	-	-	-
		Std. High	645	610	580	550	525	505	480	-	-	-
		Std. Low	545	510	470	440	410	385	360	-	-	-
6HHX-3	1/2	Opt. High	980	950	920	890	865	840	810	785	755	695
		Std. High	815	790	765	740	715	695	675	650	630	590
		Std. Low	715	680	650	625	600	575	555	530	510	465
8HHX-3	1/2	Opt. High	1040	1010	975	940	905	865	830	795	760	680
		Std. High	1030	1000	965	930	895	860	825	790	755	680
		Std. Low	895	870	845	820	790	760	735	705	680	625
10HHX-3	1/2	Opt. High	1325	1305	1285	1265	1240	1210	1180	1145	1100	1000
		Std. High	1220	1195	1170	1150	1130	1110	1085	1060	1035	960
		Std. Low	1025	1005	980	960	940	915	890	870	845	790
12HHX-3	1/2	Opt. High	1415	1395	1375	1355	1330	1310	1295	1275	1255	1220
		Std. High	1300	1280	1260	1240	1225	1205	1185	1170	1150	1115
		Std. Low	1160	1140	1120	1100	1080	1060	1040	1015	990	945
HHX 4-ROW (240V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4HHSX-4	1/7	Opt. High	465	440	410	385	360	335	310	-	-	-
		Std. High	410	390	365	340	315	290	265	-	-	-
		Std. Low	350	325	300	275	250	225	200	-	-	-
6HHSX-4	1/7	Opt. High	660	625	595	570	545	525	505	-	-	-
		Std. High	610	575	545	520	495	475	455	-	-	-
		Std. Low	515	480	445	415	390	365	340	-	-	-
6HHX-4	1/2	Opt. High	925	895	870	845	815	790	765	735	710	655
		Std. High	770	745	720	695	675	655	635	615	595	555
		Std. Low	675	645	615	590	570	545	520	500	480	440
8HHX-4	1/2	Opt. High	980	950	920	885	855	820	785	750	715	640
		Std. High	970	940	910	880	845	815	780	745	710	640
		Std. Low	845	820	795	770	745	720	695	665	640	590
10HHX-4	1/2	Opt. High	1250	1230	1210	1190	1170	1145	1115	1080	1040	945
		Std. High	1150	1125	1105	1085	1065	1045	1025	1000	975	905
		Std. Low	965	945	925	905	885	865	840	820	795	745
12HHX-4	1/2	Opt. High	1335	1315	1295	1275	1255	1235	1220	1200	1185	1150
		Std. High	1225	1210	1190	1175	1155	1135	1120	1105	1085	1050
		Std. Low	1095	1075	1055	1040	1020	1000	980	960	935	890

HHSX-HHX 240V

BLOWER PERFORMANCE

PHHX, RHHX, CHHX 3-ROW (240V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4*HHSX-3	1/7	Opt. High	435	410	385	360	335	310	290	-	-	-
		Std. High	385	365	340	315	295	270	245	-	-	-
		Std. Low	325	305	280	255	235	210	185	-	-	-
6*HHSX-3	1/7	Opt. High	615	585	555	530	510	490	470	-	-	-
		Std. High	570	535	510	485	465	445	420	-	-	-
		Std. Low	480	450	415	385	365	340	315	-	-	-
6*HHX-3	1/2	Opt. High	870	845	820	795	770	745	720	695	670	620
		Std. High	725	700	680	660	635	615	600	580	560	525
		Std. Low	635	605	580	560	535	515	495	475	455	415
8*HHX-3	1/2	Opt. High	925	900	870	835	805	770	740	710	675	605
		Std. High	915	890	860	830	795	765	735	700	670	605
		Std. Low	795	775	750	730	705	680	655	630	605	555
10*HHX-3	1/2	Opt. High	1260	1240	1220	1200	1180	1150	1120	1085	1045	950
		Std. High	1160	1135	1110	1090	1070	1055	1035	1010	985	910
		Std. Low	975	955	930	910	890	870	850	825	805	750
12*HHX-3	1/2	Opt. High	1360	1340	1320	1300	1280	1260	1240	1225	1205	1170
		Std. High	1250	1230	1210	1190	1175	1160	1140	1125	1105	1070
		Std. Low	1115	1095	1075	1055	1040	1020	995	975	950	905
PHHX, RHHX, CHHX 4-ROW (240V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4*HHSX-4	1/7	Opt. High	410	385	360	340	315	295	275	-	-	-
		Std. High	365	345	320	300	275	255	235	-	-	-
		Std. Low	310	285	265	240	220	200	175	-	-	-
6*HHSX-4	1/7	Opt. High	580	550	525	500	480	460	445	-	-	-
		Std. High	535	505	480	455	435	420	400	-	-	-
		Std. Low	445	415	385	355	335	315	290	-	-	-
6*HHX-4	1/2	Opt. High	840	815	790	765	740	720	695	670	645	595
		Std. High	700	675	655	635	615	600	580	560	540	505
		Std. Low	610	580	555	535	515	495	470	450	430	395
8*HHX-4	1/2	Opt. High	890	860	835	805	780	750	715	685	650	580
		Std. High	885	860	830	800	770	740	710	680	645	580
		Std. Low	770	745	725	705	680	655	630	605	580	535
10*HHX-4	1/2	Opt. High	1190	1170	1150	1130	1110	1085	1060	1025	990	900
		Std. High	1095	1070	1050	1030	1010	995	975	950	925	860
		Std. Low	915	900	880	860	840	820	800	780	755	710
12*HHX-4	1/2	Opt. High	1280	1265	1245	1225	1205	1185	1170	1155	1140	1105
		Std. High	1175	1155	1140	1125	1110	1095	1075	1060	1040	1010
		Std. Low	1050	1035	1015	1000	980	960	940	920	900	855

HHX 277 VOLT ECM

BLOWER PERFORMANCE

HHX 3-ROW (277V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4HHSX-3 277	1/6	Opt. High	500	465	435	400	370	345	315	-	-	-
		Std. High	445	410	375	340	310	280	255	-	-	-
		Std. Low	360	320	285	255	225	195	165	-	-	-
6HHSX-3 277	1/6	Opt. High	645	615	585	555	530	505	480	-	-	-
		Std. High	560	520	485	455	425	400	370	-	-	-
		Std. Low	445	405	365	330	295	260	225	-	-	-
6HHX-3 277	1/2	Opt. High	845	820	795	770	750	725	700	680	655	610
		Std. High	700	675	650	625	605	585	560	540	515	465
		Std. Low	600	575	550	525	500	475	450	425	400	350
8HHX-3 277	1/2	Opt. High	945	910	875	840	810	775	740	705	670	595
		Std. High	915	890	860	830	800	770	735	700	665	590
		Std. Low	795	770	745	720	700	675	650	630	610	560
10HHX-3 277	1/2	Opt. High	1315	1290	1265	1245	1225	1200	1175	1150	1115	1010
		Std. High	1210	1185	1160	1140	1120	1095	1070	1040	1010	930
		Std. Low	1025	1000	970	940	915	890	865	840	810	730
12HHX-3 277	1/2	Opt. High	1385	1355	1325	1295	1270	1240	1215	1190	1165	1120
		Std. High	1380	1350	1320	1290	1265	1235	1210	1185	1160	1115
		Std. Low	1250	1225	1195	1170	1145	1115	1085	1060	1030	970
HHX 4-ROW (277V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4HHSX-4 277	1/6	Opt. High	470	440	410	380	350	325	295	-	-	-
		Std. High	420	390	355	320	290	265	240	-	-	-
		Std. Low	340	305	270	240	210	185	155	-	-	-
6HHSX-4 277	1/6	Opt. High	610	580	550	525	500	480	455	-	-	-
		Std. High	530	490	455	425	400	375	350	-	-	-
		Std. Low	420	380	340	310	280	245	210	-	-	-
6HHX-4 277	1/2	Opt. High	795	770	750	730	705	685	665	640	620	575
		Std. High	670	640	615	590	570	550	530	510	485	440
		Std. Low	575	545	520	495	470	450	425	400	375	330
8HHX-4 277	1/2	Opt. High	890	855	825	795	765	735	700	665	630	560
		Std. High	865	835	810	785	755	725	695	660	625	555
		Std. Low	750	730	705	680	660	635	615	595	575	530
10HHX-4 277	1/2	Opt. High	1240	1215	1195	1175	1155	1135	1110	1085	1050	955
		Std. High	1140	1115	1095	1075	1055	1035	1010	985	955	875
		Std. Low	965	940	915	890	865	840	815	790	765	690
12HHX-4 277	1/2	Opt. High	1305	1280	1250	1225	1200	1170	1145	1125	1100	1055
		Std. High	1300	1275	1245	1220	1195	1165	1140	1120	1095	1050
		Std. Low	1180	1150	1125	1100	1080	1055	1025	1000	970	915

HHX 277 VOLT ECM

BLOWER PERFORMANCE

PHHX, RHHX, CHHX 3-ROW (277V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4*HHSX-3 277	1/6	Opt. High	440	410	380	350	325	300	275	-	-	-
		Std. High	390	360	330	300	270	245	225	-	-	-
		Std. Low	315	280	250	225	200	170	145	-	-	-
6*HHSX-3 277	1/6	Opt. High	570	540	515	490	465	445	420	-	-	-
		Std. High	480	445	415	390	365	345	320	-	-	-
		Std. Low	375	340	305	275	250	220	190	-	-	-
6*HHX-3 277	1/2	Opt. High	750	730	710	690	665	645	625	605	585	545
		Std. High	625	600	580	560	540	520	500	480	460	415
		Std. Low	535	515	490	470	445	425	400	380	355	310
8*HHX-3 277	1/2	Opt. High	840	810	780	750	720	690	660	630	595	530
		Std. High	815	790	765	740	710	685	655	625	590	525
		Std. Low	710	690	665	645	625	600	580	565	545	500
10*HHX-3 277	1/2	Opt. High	1250	1225	1200	1180	1160	1140	1120	1090	1060	960
		Std. High	1150	1125	1100	1080	1060	1040	1020	990	960	885
		Std. Low	975	950	920	895	870	845	820	795	770	695
12*HHX-3 277	1/2	Opt. High	1330	1300	1270	1245	1220	1190	1165	1145	1120	1075
		Std. High	1325	1295	1265	1240	1215	1185	1160	1140	1115	1070
		Std. Low	1200	1175	1145	1120	1095	1070	1045	1015	990	930
PHHX, RHHX, CHHX 4-ROW (277V)												
UNIT MODEL	MOTOR HP	SPEED TAP	EXTERNAL STATIC PRESSURE (inches of water)									
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.5
4*HHSX-4 277	1/6	Opt. High	405	380	355	325	300	275	255	-	-	-
		Std. High	360	330	300	270	245	225	205	-	-	-
		Std. Low	275	245	220	195	170	150	125	-	-	-
6*HHSX-4 277	1/6	Opt. High	535	510	485	460	440	420	400	-	-	-
		Std. High	455	420	390	365	345	325	300	-	-	-
		Std. Low	355	320	290	260	235	205	175	-	-	-
6*HHX-4 277	1/2	Opt. High	730	710	690	670	650	630	610	590	570	530
		Std. High	610	585	560	540	520	500	480	460	440	400
		Std. Low	520	495	470	445	425	405	385	365	340	295
8*HHX-4 277	1/2	Opt. High	820	790	760	735	705	675	645	615	580	515
		Std. High	805	780	755	730	700	675	645	615	580	515
		Std. Low	700	675	655	635	615	595	575	555	535	495
10*HHX-4 277	1/2	Opt. High	1180	1155	1135	1115	1095	1075	1055	1030	1000	905
		Std. High	1085	1060	1040	1020	1000	980	960	935	905	830
		Std. Low	905	885	860	835	815	790	765	745	720	650
12*HHX-4 277	1/2	Opt. High	1225	1200	1175	1150	1125	1100	1080	1055	1035	990
		Std. High	1220	1195	1170	1145	1120	1095	1075	1050	1030	985
		Std. Low	1110	1085	1060	1040	1015	990	965	940	910	860

GUIDE SPECIFICATIONS

Part 1 — General

1.01 SECTION INCLUDES

A. Fan Coil Units

1.02 REFERENCES

AMCA 99 – Standards Handbook

AMCA 210 -- Laboratory Methods for Testing Fans for Rating Purposes

AMCA 300 – Test Code for Sound Rating Air Moving Devices

ARI 440 – Room Fan-Coil Unit

ASTMB117 – Standard Practice for Operating Salt Spray Apparatus

NEMA MGI – Motors and Generators

NFPA 70 – National Electric Code

SMACNA – HVAC Duct Construction Standards – Metal and Flexible

UL 723 – Test for Surface Burning Characteristics of Building Materials

UL 900 – Test Performance of Air Filter Units

UL 1995 – Standard for Heating and Cooling Equipment

UL 94 – Test for Flammability of Plastic Materials for Parts in Devices and Appliances

1.03 SUBMITTALS

A. Shop drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements. A computer generated capacity selection shall be submitted for each cooling coil with design points and final operating point clearly noted.

B. Product Data:

1. Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, finishes of materials, and electrical characteristics and connection requirements.

2. Provide data of filter media, filter performance data.

3. Manufacturer's installation instructions.

1.04 OPERATION AND MAINTENANCE DATA

A. Maintenance Data: Include instructions for lubrication, filter replacement and motor and drive replacement.

1.05 QUALIFICATIONS

A. Maintenance Data: Include instructions for lubrication, filter replacement and motor and drive replacement.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept products on site on factory-installed shipping skids. Inspect for damage.

B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, and fan has been test run under observation.

GUIDE SPECIFICATIONS (CONT.)

Part 2 — Products

2.01 MANUFACTURERS

A. The following manufacturers are approved for use. No substitutions will be permitted.
First Company, Dallas TX

2.02 CASING

A. Unit shall have corrosion resistant casing consisting of galvanized steel panels. Unit panels shall be fully insulated with 1.5lb fiberglass insulation with anti-microbial agent. Removable panels shall provide full access to unit components..

B. Drain pans shall be heavy gauge galvanized steel with an insulating coating. Optional stainless steel drain pan shall include an insulating coating. Drain pans shall be removable for cleaning or replacement without removing coils or disturbing coil connections.

2.03 SUPPLY FAN

A. Provide DWDI forward-curved supply fans. Fan assemblies shall be statically and dynamically balanced by manufacturer. The housings are constructed from heavy gauge galvanized steel with die-formed inlet cones.

B. Fan and motor mounting platform shall be a minimum of 12 gauge LFQ galvanized steel.

2.04 MOTORS

A. Direct drive motors to be PSC or ECM type, permanently lubricated type with internal thermal overload protection and mounted with rubber isolation bushings.

2.05 ELECTRICAL

A. Provide units with 115, 208-230, or 277V, 3-speed with 24v control transformer, and 15 amp service switch or optional ECM motor with 120/24V control transformer, 15 amp service switch, 4 speed taps. Controls to be factory mounted and tested.

2.07 COOLING AND HEATING COIL SECTIONS

A. Provide access to coils for service and cleaning..

B. Water Coils: fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tube shall not be visible between fins. Coil tubes shall be seamless copper, expanded into fins, and brazed at joints. Coil connections shall be copper with sweat connection size to be determined by manufacturer based upon the most efficient coil circuiting. Manual air vent connections shall be provided at the highest point to assure proper venting. Coils shall be tested with 350 pounds air pressure and suitable for 300 psig working pressure. Coil casings shall be a formed channel frame of galvanized steel.

2.08 FILTERS

A. Filter to be disposable type and media shall be UL 900 listed, Class I or Class II.

B. MERV 8 can be used as an option, will increase static by 0.25

Part 3 — Execution

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.



ACCESS PANELS /FILTER



*STANDARD PANEL OPTIONS FOR HH SERIES					*IAQ MERV 8 PANEL OPTIONS FOR HH SERIES				
PART #	UNIT SIZE	PANEL TYPE	FRAME DIMENSIONS	*FILTER SIZE	PART #	UNIT SIZE	PANEL TYPE	FRAME DIMENSIONS	*FILTER SIZE
965	3,4,5,6,8	LOUVERED	27-1/2 X 43	20X20X1 (1)	965-M8	3,4,5,6,8	LOUVERED	27-1/2 X 43	20X30X1 (1)
965-1		SOLID							
966	10	LOUVERED	27-1/2 X 49	20X20X1 (1)	966-M8	10	LOUVERED	27-1/2 X 49	20X20X1 (2)
966-1		SOLID							
967	12	LOUVERED	27-1/2 X 55-1/2	20X20X1 (1)	967-M8	12	LOUVERED	27-1/2 X 55-1/2	20X20X1 (2)
967-1		SOLID							

NOTE: * Filters not included









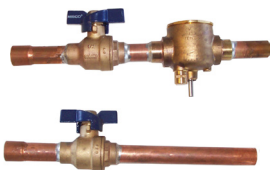
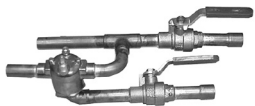

IAQ PANEL PERFORMANCE DATA (4) (Clean Filter)										
	CFM									
	500	600	700	800	900	1000	1100	1200	1300	1500
965-M8 with AF20301HV (20x030, Merv 8) Filters (2)	0.04	0.06	0.06	0.08	0.09	0.10	---	---	---	---
966-M8 with AF20201HV (20x020, Merv 8) Filters (2)	0.04	0.06	0.06	0.08	0.09	0.10	---	---	---	---
967-M8 with AF20201HV (20x020, Merv 8) Filters (2)	---	0.05	0.05	0.07	0.08	0.10	---	---	---	---
967-6-M8 with AF20251HV (20x025, Merv 8) Filters (2)	---	---	---	0.05	0.06	0.07	0.08	0.09	---	---
967-8-M8 with AF20301HV (20x30, Merv 8) Filters (2)	---	---	---	---	---	0.06	0.06	0.08	0.08	0.10

NOTES:

- (1) The above is the actual laboratory test data or these panels.
- (2) Glassfloss® Industries HV series Merv 8 filters were used to generate above data (**filters must be field supplied**)
- (3) Alternate Merv 8 filters would be acceptable provided they have equal or less resistance.
- (4) Refer to fan coil specification sheets for fan coil blower data.

ACCESSORIES

VALVE PACKAGES AND ACCESSORIES

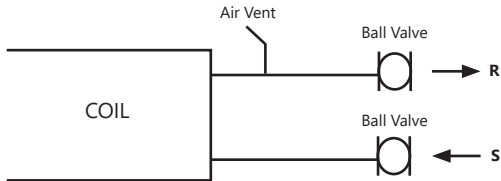
ACTUATOR		 <p>2-Way Valve and Actuator</p>	ACTUATOR MATERIALS							
2-POSITION (ON-OFF) 50/60HZ			BASE	POLYCARBONATE		APPROVALS				
VOLTAGE	PART #		COVER	POLYCARBONATE		ETL Cul CE				
24V	E50131180		BASE PLATE	ALUMINUM						
120/1/60	E50132180		LEAD LENGTH	6" - (24V 18")						
230/1/60	E50138180		POWER REQUIREMENTS	6.5W, 7 VA						
277/1/60	E50137180		AMBIENT TEMPERATURE RANGE	32 TO 170 F						
		MICRO SWITCH	5 A, 250 V							
		HUMIDITY	95% NON-CONDENSING							
VALVE BODY MATERIALS			VALVE BODIES (2-POSITION)							
BODY	BRASS		E43XXXX 3-WAY		E42XXXX 2-WAY					
STEM	STAINLESS STEEL									
TWO O-RINGS SEALS	EPDM									
PADDLE	EPDM									
FLUID	WATER/GLYCOL									
MAXIMUM % OF GLYCOL	50%		VALVE PACKAGE ACCESSORIES							
TEMPERATURE RANGE	32 TO 230		Automatic Fixed Flow Control		Manual Adj. Flow Setter					
MAXIMUM STATIC PRESSURE	300 PSI		1/2"	3/4"	1/2"	3/4"				
SWEAT CONNECTION	1/2", 3/4", 1"		CP654XXXXX	CP655XXXXX		CP601	CP6011			
FLOW CHARACTERISTICS			PETE'S PLUG	Requires CP6025 CP61712						
Connection Size	Flow Coefficient	Maximum Close-Off Pressure AP	Ball Valves (Sweat)			Y-Strainer (Sweat)				
1/2"	1.0 Cv	75	Full Port (T-Handle)			1/2"	3/4"			
1/2"	2.5 Cv	50	1/2"	3/4"	1"	CP603	CP6031			
3/4"			CP-9	CP-90	CP-905					
1/2"	3.5 Cv	30								
3/4"								EXTENDED DRIP LIPS		
1"	919-1 15"									
3/4"	5 Cv	25	919-1X1ss 15"							
1"			919-1EXT 19"							
3/4"	7.5 Cv	20								
1"										
1"	8 Cv	20								
STANDARD VALVE PACKAGE FACTORY MOUNTED 2-POSITION (ON-OFF)										
2-WAY 9VH*22BM WITH 2-BV'S				3-WAY 9VH*23BM WITH 2-BV'S						
T4071 5/8 T4072 7/8 Auto Changeover Requires Aguastat (2-pipe applications)				Strap-on Aquastat 5/8" O.D. Tubing 10 amps induction 60 amps locked rotor 25 amps resistive Temperature Changes at 95° F + 10° F Resets at 65° F + 5° F						

PIPING PACKAGE OPTIONS

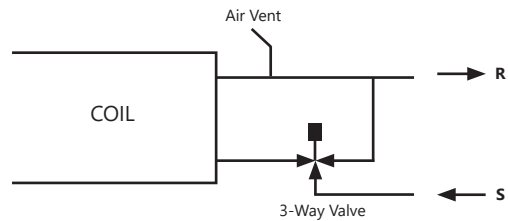
TWO POSITION OR MODULATING

Manual air vents are standard and are factory mounted on all chilled water and hot water coils. *All pre-piped on/off or modulating valve packages are factory assembled with sweat connections.*

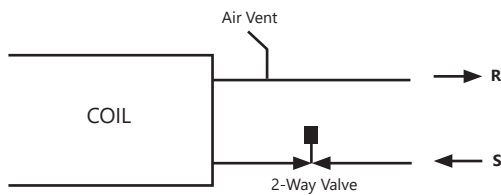
Ball Valves only, No Control Valve



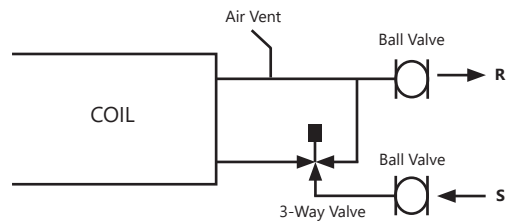
3-Way Valve, No Ball Valves



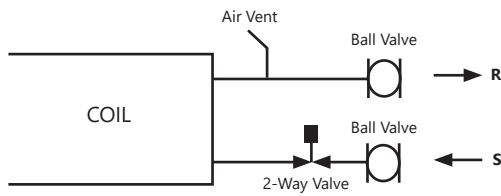
2-Way Valve, No Ball Valves



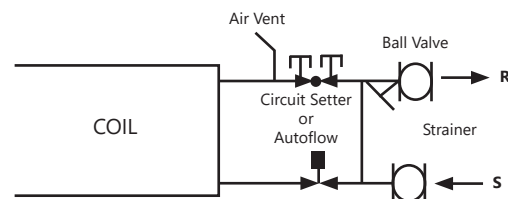
3-Way Valve, with 2-Ball Valves



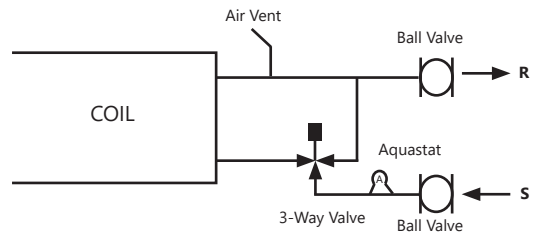
2-Way Valve with 2-Ball Valves



3-Way Valve, with 2-Ball valve and Manual Circuit Setter or Automatic Flow Control, Y-Strainer, PT's



3-Way Valve with 2-Ball Valves and Aquastat



Add Options:

Y-Strainers, Pete's Plugs, Cleanout Blow-down, SS hose kits, Aquastats

Additional options and configurations may be available. Contact factory for availability.

Valve packages are available as kits or factory mounted on certain products. Contact factory for availability.



FIRST CO.
P.O. BOX 270969 - DALLAS, TEXAS 75227
PH. (214) 388-5751 | FAX (214) 388-2255
WWW.FIRSTCO.COM

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